

REMARKS/ARGUMENTS

Claims 1-8, 10, 11, 14 and 48-52 are pending in the application. Claims 1 and 48 have been amended. No new matter has been added. Reconsideration of the claims is respectfully requested.

Support for amendments to independent claims 1 and 48

There is support in the application for the amendment to independent claims 1 and 48. For instance, "This MED-I increases basically linearly as a function of the thickness of the epidermis." (page 3, line 32-page 4, line 1). In addition, from the discussion of Figure 2, "As can be seen from the graphical representation MED-I increases as a function of the epidermis thickness with such correlation being, on average, a linear one." (page 8, lines 24-26).

No new matter is introduced by the amendments to independent claims 1 and 48.

Claim Rejections – 35 U.S.C. § 103

On page 3 of the Office Action, claims 1, 2, 4-7, 11, 14 and 48-52 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Anderson et al. in combination with Chernoff, Sator et al. and Neigut; on page 4, claims 8 and 10 are rejected as being unpatentable over Anderson et al. in combination with Chernoff, Sator, et al. and Neigut as applied to claims 1, 2, 3-7, 11, 14 and 48-52 and further in combination with Mueller et al.; and on page 4, claim 3 is rejected as being unpatentable over Anderson et al. in combination with Chernoff, Sator et al. and Neigut as applied to claims 1, 2, 4-7, 11 and 14, and further in combination with Bonis et al..

Three criteria must be met to establish a *prima facie* case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the

prior art reference, or combination of references, must teach or suggest all the claim limitations. MPEP § 2142. Applicant respectfully traverses the rejection since the prior art fails to disclose all the claim limitations and there would be no motivation to combine the references as proposed by the Examiner.

Anderson discloses a technique to scan a patient's skin, designate areas of affected skin, and selectively deliver high doses of phototherapeutic ultraviolet radiation to the designated areas. (Abstract)

Anderson discloses various radiation doses as follows:

"The 'art' of phototherapy lies in achieving clearing without causing painful sunburn-like reactions. Thus, skin unaffected with psoriasis, i.e., normal skin, limits the therapeutic dose. The minimal erythema dose (MED) in normal skin is defined as the lowest fluence eliciting an inflammatory response, and is used to guide dosimetry. If the patient receives more than 1 MED, a "sunburn" will occur. At 3 MED a painful sunburn with blistering can occur, and at 10 MED a life-threatening burn results. Prior to a phototherapy treatment, the doctor determines the MED for a particular patient." (column 2, lines 9-24; emphasis added)

It is important to note that in the technique of Anderson, radiation doses are determined by skin that is unaffected by psoriasis.

In Anderson, the dose for each patient is a multiple of the MED. For instance:

"High doses of UV radiation more effectively clears psoriasis. For example, exposing individual sites within plaques of psoriasis to a waveband near 310 nm clears the sites in an average of only 6 to 8 treatments at three minimal erythema doses (MED) per treatment, without any sunburn reactions in the plaque. Doses can be greater than about two MED, greater than about three MED, about ten MED, or greater than about ten MED. In particular, in some cases, psoriasis can be cleared in only one treatment with a dose of about sixteen MED. Even though doses at about eight to sixteen MED typically cause blisters or erosions of the skin, some patients do not mind such adverse effects given the rapid clearing of psoriasis at such doses. Nonetheless, to avoid such adverse effects, many patients should be treated at about two to five MED." (column 6, lines 9-24)

In Anderson, applied doses are either constant over all the affected areas on the patient (column 15, lines 37-48), or may be varied from area-to-area according to a trial-and-error procedure involving measurement of diagnostic ratios obtained from essentially real time CCD images. For instance:

“Once the scan is complete, computer 30 displays on a computer monitor 31 grey scale images of the patient's skin based on each of the CCD reflectance, spectrometer reflectance, and fluorescence ratios (step 146). Computer 30 then prompts the user for trial threshold values (step 148). Thereafter, computer 30 determines and displays a "treatment" image of the patient's skin that highlights areas of skin that would be treated based on the trial threshold values and the diagnostic ratios from the scan (step 150). Based on the grey scale images and the treatment image, the user modifies the trial threshold values. The program then repeats steps 148 and 150, until the user is satisfied with the treatment image, at which point computer 30 stores the final threshold values and the final treatment image (step 152). These threshold values can be used in a subsequent treatment scan for the same patient in which the program operates in the first mode, as shown in FIG. 3.” (column 14, line 56-column 15, line 5)

This trial-and-error technique of Anderson is silent with respect to several of the elements recited in independent claim 1. Each of these elements is described in detail below.

First, Anderson does not teach or disclose “determining a first and a second epidermis thickness in the first and second skin areas, respectively”. Anderson is completely silent with respect to skin thickness.

Second, Anderson does not teach or disclose “determining a first and a second laser radiation dose that causes a visible redness without blister formation to occur in the first and second skin areas, respectively”. Note that the first and second skin areas of claim 1 are “areas affected by psoriasis”. (preamble) Anderson does not teach or disclose determining any radiation doses in affected areas; the determination of the MED in Anderson is done only for “normal skin”:

A minimal erythema dose (MED) is defined as the lowest fluence eliciting an inflammatory response in normal skin. The MED varies from patient to patient and depends on natural skin color, as well as other factors, such as age and skin thickness. (column 4, lines 34-35)

Note that Anderson discloses determining a radiation dose (MED) that varies from patient-to-patient, but does not vary from affected area-to-affected area on the same patient.

Third, Anderson does not teach or disclose "the first and second laser radiation doses depending basically linearly on the first and second epidermis thicknesses, respectively". There is no discussion whatsoever of skin thickness, doses that vary area-to-area, or any linear relationship or correlation between them.

Fourth, Anderson does not teach or disclose "varying in increments a UV radiation dose per treatment generated by a laser from the first skin area to the second skin area depending on the first and second epidermis thicknesses and the first and second laser radiation doses."

Note that Anderson does disclose "vary[ing] the fluence of the therapeutic dose for each treatment area (by controlling the shutter) according to the differences of the diagnostic ratios from the threshold values". (column 15, lines 49-52) There is a great deal of attention in Anderson devoted to these diagnostic ratios, including the number of ratios required, the physical signals that are measured to produce the ratio(s), and the method of cutoff of the ratio(s). All of these signals and the resulting ratios are derived from a "color digital image of the patient's skin measured by CCD". (column 14, lines 34-36)

However, one of ordinary skill in the art would not modify the technique of Anderson so that the applied dose depends on skin thickness and on redness-without-blister radiation doses that vary from affected area-to-affected area on the patient. Such a modification would require abandoning all the diagnostic data obtained in essentially real time from the CCD images of Anderson, in order to base the applied dose on an additional measurement of skin thickness that has to be done prior to the laser treatment itself and includes no real-time data.

Indeed, basing the applied dose on the additional measurements of epidermis thickness introduces extra steps into the technique of Anderson in order to produce the same results. One of ordinary skill in the art would certainly not devote extra effort into producing a result already provided by Anderson.

As a result, Anderson teaches away from independent claim 1, and cannot be combined with any additional references to render independent claim 1 obvious. Reconsideration of claim 1, allowance, and notification to that effect are respectfully requested.

Dependent claims 1-8, 10, 11 and 14, which are dependent from independent claim 1, were also rejected under 35 U.S.C. §103(a) as being unpatentable over the cited references. While Applicants do not acquiesce with the particular rejections to these dependent claims, it is believed that these rejections are moot in view of the remarks made in connection with independent claim 1. These dependent claims include all of the limitations of the base claim and any intervening claims, and recite additional features which further distinguish these claims from the cited references. Therefore, dependent claims 1-8, 10, 11 and 14, are also in condition for allowance. Reconsideration of dependent claims 1-8, 10, 11 and 14, allowance, and notification to that effect are respectfully requested.

With regard to independent claim 48, Applicant asserts that claim 48 is not obvious in view of the cited references, for the reasons stated above with regard to independent claim 1. Reconsideration of claim 48, allowance, and notification to that effect are respectfully requested.

Similarly, Applicant asserts that dependent claims 49-52 are not obvious in view of the cited references, for the reasons stated above with regard to the claims that depend from independent claim 1. Reconsideration of claims 49-52, allowance, and notification to that effect are respectfully requested.

CONCLUSIONS

In view of the amendments and reasons provided above, it is believed that all pending claims are in condition for allowance. Applicant respectfully requests favorable reconsideration and early allowance of all pending claims.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicant's attorney of record, Ronald E. Gerber at (612) 436-3153.

Respectfully submitted,

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